UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/480,472	06/06/95	MCDONOUGH S	213/066

18M2/0710

EXAMINER	
TRAN, P	

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ART UNIT	PAPER NUMBER
1807	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 08/480,472	Applicant(s) MCDONOUGH ET AL.
	Examiner PAUL B. TRAN	Group Art Unit 1807

☒ Responsive to communication(s) filed on *Jun 6, 1995; Jan 22, 1996; Jun 3, 1996* .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *24-42, 48-51, and 54-56* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *24-42, 48-51, and 54-56* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Part III DETAILED ACTION

1. The examiner acknowledges the receipt of Applicant's preliminary Amendments, filed June 6, 1995; January 22, 1996; and June 3, 1996. Claims 1-23, 43-47, 52 and 53 have been cancelled by Applicant; new claims 54-56 are added. Claims 14-42, 48-51 and 54-56 are pending before the examiner.

2. Claims 24-42, 48-51, 55 and 56 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are vague and indefinite because the essence ("consisting essentially of") of the nucleotide sequence of the primer, promoter-primer, or oligonucleotide is not defined in the specification. For instance, what nucleotides are considered as essential in the sequence?; with respect to what parameter(s) is the essence of the oligonucleotide? Absence a clear description of the phrase, the metes and bounds of the invention, the sequence of the oligonucleotide as claimed, are thus unclear to the artisan.

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 24-38, 49, 51, 56 are rejected under 35 U.S.C. § 112, first paragraph, as the disclosure is enabling only for claims limited to that the oligonucleotides are modified at the 3' end to reduce extension by a polymerase. See M.P.E.P. §§ 706.03(n) and 706.03(z).

The specification discloses the use of an oligonucleotide which is modified at its 3' end, which modification reduces primer extension by a polymerase. Specific guidance and working examples provided in the instant specification are limited to only modification at the 3' end of the oligonucleotides. The claims however are broadly drawn, reciting oligonucleotides which are modified without being limited to only the modification carried out the 3' end. Absent specific guidance or working examples teaching modifications of an oligonucleotide, other than at the 3' end, which reduces primer extension by polymerase, it would require an undue experimentation to one skilled in the art to practice the invention other than modification at the 3' ends. Although the level of skill in the art is considered high, in view of the complexity involved in hybridization of modified oligonucleotides to their target and whether or not the complex is recognized by DNA- or RNA-dependent polymerase for primer extension, the results from such experimentation are unpredictable. The invention as claimed thus are not enabling absent further specific teaching or guidance. Therefore, the specification is not commensurate in scope with the claims.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same

person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

4. Claims 24-33, 35, 36 and 54 are rejected under 35 U.S.C. § 103 as being unpatentable over Guatelli et al. in view of Schuster et al. (U.S. Patent No. 5,169,766).

Guatelli et al. teaches a composition comprising a target RNA; T7 promoter-primer and primer both of which complementary to the target sequence near the 3' ends; RNAse H; T7 RNA polymerase; and reverse transcriptase (Figure 1). Not taught or suggested in Guatelli et al. is modified primers or promoter-primers.

Schuster et al. discloses a method for amplifying nucleic acid using a promoter-primer blocked at the 3' end (Abstract; column 12, lines 18-36). Also disclosed therein is a kit comprising reagents including oligonucleotides and polymerases for practicing the method (column 12, lines 39-52).

It would have been *prima facie* obvious to an ordinary skill in the art at the time the instant invention was made to make a composition or a kit comprising the components as recited. The artisan would have been motivated to make a composition as claimed because the components would enable the DNA synthesis method as taught in Guatelli et al. The artisan would also have been motivated to modify the promoter-primer because as disclosed in Schuster et al., the modification would prevent unwanted transcription which would affect the amplification procedure. Although in Schuster et al. the modified 3' end is blocked and in the instant invention, it is modified to reduce extension by

polymerase as compared to an unmodified equivalent, absent unexpected results it would have been obvious to an ordinary skill in the art to reduce extension and combine modified and unmodified oligonucleotides to control the effect of arbitrary transcription from the unmodified oligonucleotides. Regarding further limitations in the dependent claims absent unexpected results the components drawn therein are obvious variants that would lead to the same results.

5. Claims 34, 37 and 38 are rejected under 35 U.S.C. § 103 as being unpatentable over Guatelli et al. in view of Schuster et al. as applied to claims 24 and 35 above, and further in view of Hogan et al. (U.S. Patent No. 5,030,557).

Hogan et al. discloses a method of enhancing nucleic acid hybridization using a "helper" oligonucleotide together with a probe specific for the target nucleic acid (Abstract, Claim 23). It would have been *prima facie* obvious to an ordinary skill in the art at the time of the instant invention to add at least one helper oligonucleotide to the composition or kit because Hogan et al. discloses that it would enhance the hybridization of nucleic acid.

6. Claims 39-42 are rejected under 35 U.S.C. § 103 as being unpatentable over Rogal et al. or Normand et al.

Rogal et al. teaches a nucleic acid sequence which includes the sequence set forth in SEQ ID NO. 2 (Figure 3, nucleotides 147-177).

Normand et al. teaches a nucleic sequence comprising the sequence set forth in SEQ ID NO. 7 (Figure 3, nucleotides 2712-2728).

It would have been *prima facie* obvious to an ordinary skill in the art at the time the instant invention was made to prepare an oligonucleotide consisting essentially of sequences as set forth in SEQ ID NO. 2 or 7. The artisan would have been

motivated to do so because the oligonucleotides can be used as a probe or primer for obtaining the whole nucleic acid or gene containing the oligonucleotide. It would also have been obvious to an ordinary skill in the art to package the oligonucleotides in a kit to facilitate the commercialization of the oligonucleotides for detection or synthesis sequence that comprises it.

7. Claims 48-51, 55 and 56 are rejected under 35 U.S.C. § 103 as being unpatentable over Rogal et al. or Normand et al. as applied to claims 40-42 above, and further in view of Schuster et al. (U.S. Patent No. 5,169,766).

Schuster et al. discloses a method of synthesizing nucleic acid in which an oligonucleotide is modified at the 3' terminus to block extension by polymerase to avoid arbitrary transcription (column 12, lines 18-36).

It would therefore have been *prima facie* obvious to an ordinary skill in the art to further modified the oligonucleotide, which is then used in a method of synthesizing sequence containing that of the oligonucleotide using the method as taught in Schuster et al. It would also have been obvious to an ordinary skill in the art to package the oligonucleotides in a kit to facilitate the commercialization of the oligonucleotides for detection or synthesis sequence that comprises it.

8. Any inquiry concerning this communication or those earlier from the examiner should be directed to Paul B. Tran, Ph.D., whose telephone number is (703) 308-4040.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 308-0196.

Paper related to this application may be submitted to Group 1800 by facsimile transmission. Papers should be faxed to Group

1800 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center number is (703) 305-7401.

Paul B. Tran, Ph.D.
Art Unit 1807
7/1/96

W. GARY JONES
SUPERVISORY PATENT EXAMINER
GROUP 1800

7/3/96